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# Abstract

This document provides the terms of a call for new HDR materials for future video coding development.

# Introduction

The current JVET HDR Common Test Conditions (CTCs) [1] consider two classes of sequences: 1. class H1 made of 7 clips of 1080p (HD) or lower resolution, in BT.2100 PQ format; 2. class H2 made of 4 clips of 4K (UHD) resolution, in BT.2100 HLG format. These clips were proposed to JVET before 2015. Since then, experience and maturity of HDR content production has evolved, and more recent HDR content generally present different characteristics (maximum light level, average light level, colour gamut coverage, etc.) than what can be observed with the current HDR CTCs test content.

In order to properly study and explore next generation video coding technologies using more modern HDR content, this document calls for new HDR material for the development of next generation video coding technologies.

# Test material sought

Suitable HDR materials for the development of next generation video coding technologies are sought. The following attributes are the main focus for the material.

## Sequence formats and frame rates

HDR materials in the following sequence formats (picture resolutions) are sought.

* 8Kx4K
* 4Kx2K
* 1080p

It is preferred that the licence terms allow downsampling, cropping, change of format, compression and other types of processing.

Frame rates most used in popular HDR video applications, such as 24/50/60/100/120 frames per second are sought. Preservation of native frame rates and picture resolutions is desirable. Raw (uncompressed) material is desirable, but material with a low amount of compression (visually lossless) is also acceptable. Changes from native resolution or/and frame rate, as well as light compression (if used) should be described.

## Colour spaces and colour sampling

It is preferred that the test material be available in BT.2100 Y′CbCr 4:2:0. However, the test material may be in an RGB colour space in full-resolution colour sampling format (4:4:4).

## Transfer characteristics

The test material is required to be available in BT.2100 PQ or HLG format.

## Bit depth

The test material is required to have a bit depth of 10 bits per component or higher, such as 12, 14 or 16 bits per component.

## Metadata

Metadata that are available should be provided. This could include:

* Information about camera type or generation method (for synthetic video).
* Extrinsic (position) and intrinsic camera parameters from calibration or external measurements.
* Information about illumination / lighting conditions.
* Information about lens focus and opening.
* Information about any processing applied (e.g. colour grading).

## Scanning methods

The test material must be progressively scanned (not interlace-scanned).

## Sequence length

The length of the test material should be at least 5 seconds long, and preferably 10 seconds or longer.

## Content quality

For camera captured content, the sequences should be captured with cameras that reflect the state of the art in the intended application domains. Synthetic video sequences are also welcome.

## Content diversity

The test material should cover a variety of characteristics and content types, including content that is challenging for a typical video codec. The following are some possible examples of such characteristics:

* large contrast/dynamic range,
* wide colour gamut coverage,
* irregular camera motion, zoom, rotation, and change of camera viewpoint (pan, dolly etc.),
* non-rigid object motion, irregular motion trajectories,
* challenging texture structures,
* slow illumination changes, as well as flash,
* different focus planes within the same picture,
* fades/cross fades,
* non-camera captured content (animation, gaming, screen content, synthetic video etc.),
* film grain and/or noise,
* wide field of view (fish-eye/360 degree video etc).

Content examples include sports (soccer, basketball), nature (falling snow, rain, moving plants and animals), people and faces, music video, performances, scenes from movies, gaming, computer-generated content, user-generated content, panoramic video, vertical video, VR, surveillance.

The test material should not have scene cuts.

# Logistics

Prospective contributors of test sequences should refer to the following contact:

Mathias Wien: wien@lfb.rwth-aachen.de

Various delivery formats can be negotiated.

Please consider clarifying conditions and copyrights under which the sequences can at least be used by members of MPEG and VCEG or by other standardization bodies that may cooperate with JVET during the development of standards. We would prefer allowance of usage in the context of JVET work that is as unlimited as possible (e.g. allowing cropping, resampling, format changes, re-hosting and redistribution, public demonstrations of technology, snapshots and test results in academic publications etc.).

Allowance of usage beyond that purpose is desirable, but not mandatory.

Please clarify any restrictions that may apply; these will be documented in JVET databases of test materials. If needed, the above contact is able to provide you with example copyright agreements that have been used in similar cases in the past.

# References

[1] A. Segall, E. François, W. Husak, S. Iwamura, D. Rusanovskyy, “VTM and HM common test conditions and evaluation procedures for HDR/WCG video, ”, Document JVET-AC2011, 29th Meeting, by teleconference, 11–20 January 2023, <https://jvet-experts.org/doc_end_user/documents/29_Teleconference/wg11/JVET-AC2011-v1.zip>

[2] Recommendation ITU-R BT.2100-2 (2018), *Image parameter values for high dynamic range television for use in production and international programme exchange.*